

Fig. 1

CONstrained DEGREE OF FREEDOM	X-AXIS DIRECTION TRANSLATION	Y-AXIS DIRECTION TRANSLATION	Z-AXIS DIRECTION TRANSLATION	ROTATION AROUND X-AXIS	ROTATION AROUND Y-AXIS	ROTATION AROUND Z-AXIS
SUPPORTING MEMBER						
COMPLETELY CONSTRAINED CONNECTOR	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE
COMPLETELY CONSTRAINED LONG HOLE CLIP	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE
ROTATABLY CONSTRAINED ROUND HOLE CLIP	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	POSSIBLE
ROTATABLY CONSTRAINED CORRUGATED LONG HOLE CLIP	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	POSSIBLE	IMPOSSIBLE	IMPOSSIBLE
ROTATABLY CONSTRAINED CORRUGATED ROUND HOLE CLIP	IMPOSSIBLE	IMPOSSIBLE	IMPOSSIBLE	POSSIBLE	IMPOSSIBLE	POSSIBLE
COMPLETELY CONSTRAINED BRANCH POINT	POSSIBLE	POSSIBLE	POSSIBLE	POSSIBLE	POSSIBLE	POSSIBLE

FIG. 2

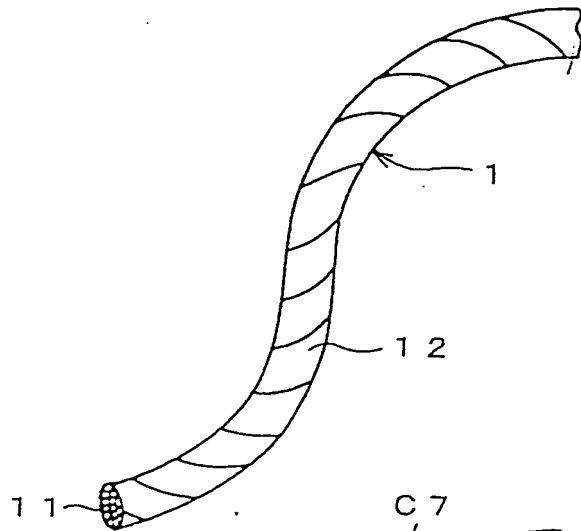


FIG. 3A

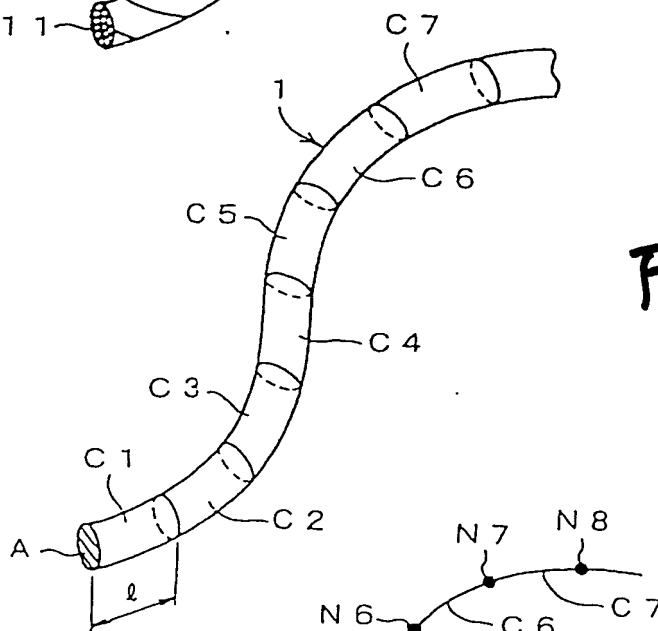


FIG. 3B

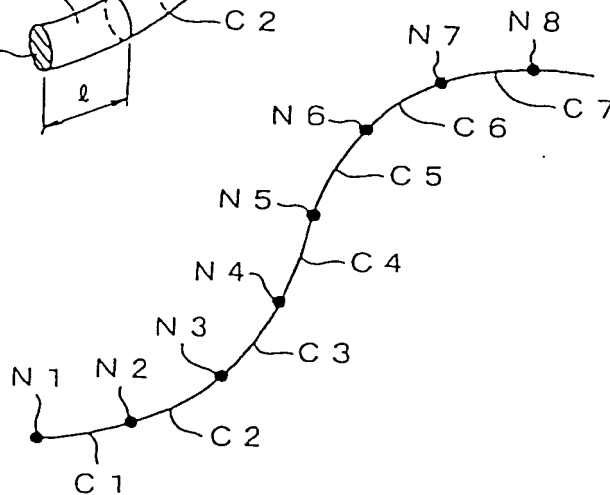


FIG. 3C

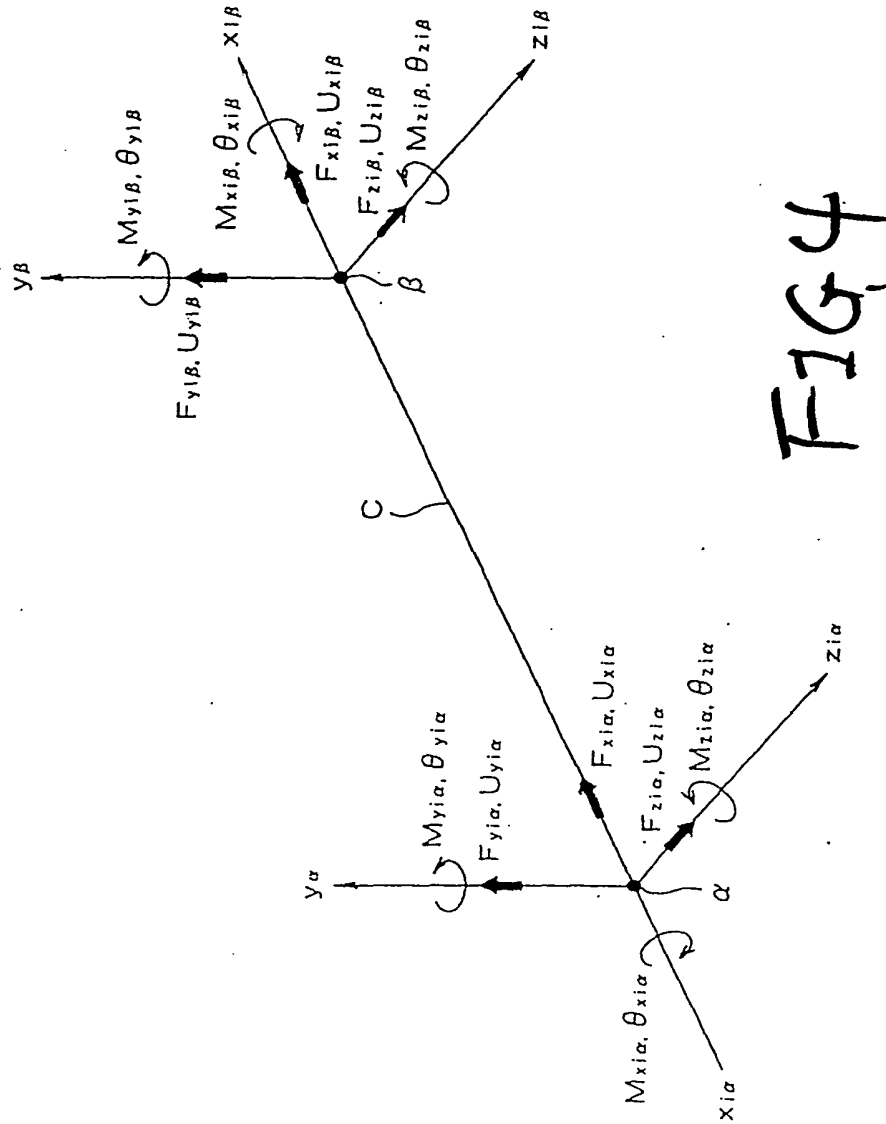


FIG. 4

FIG. 5A

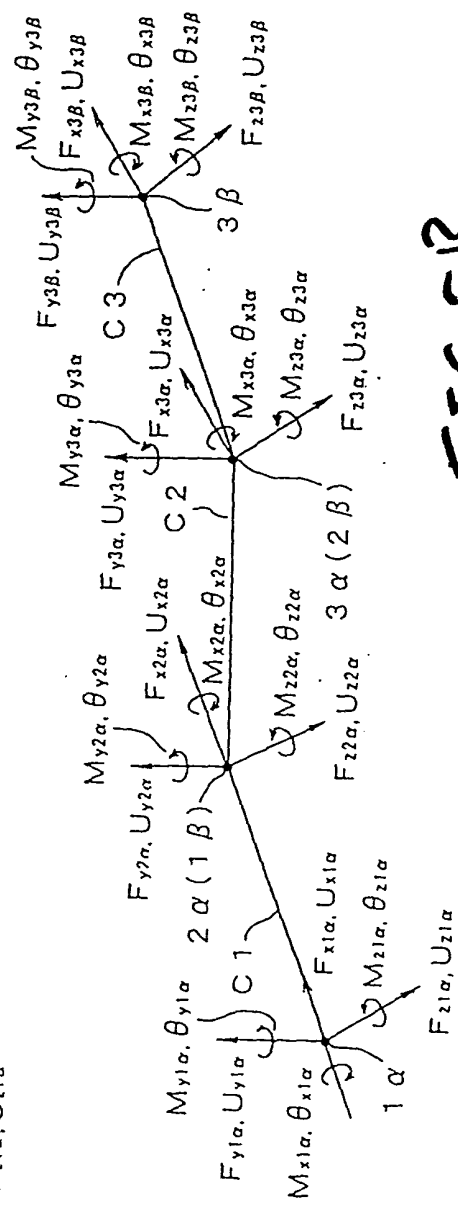
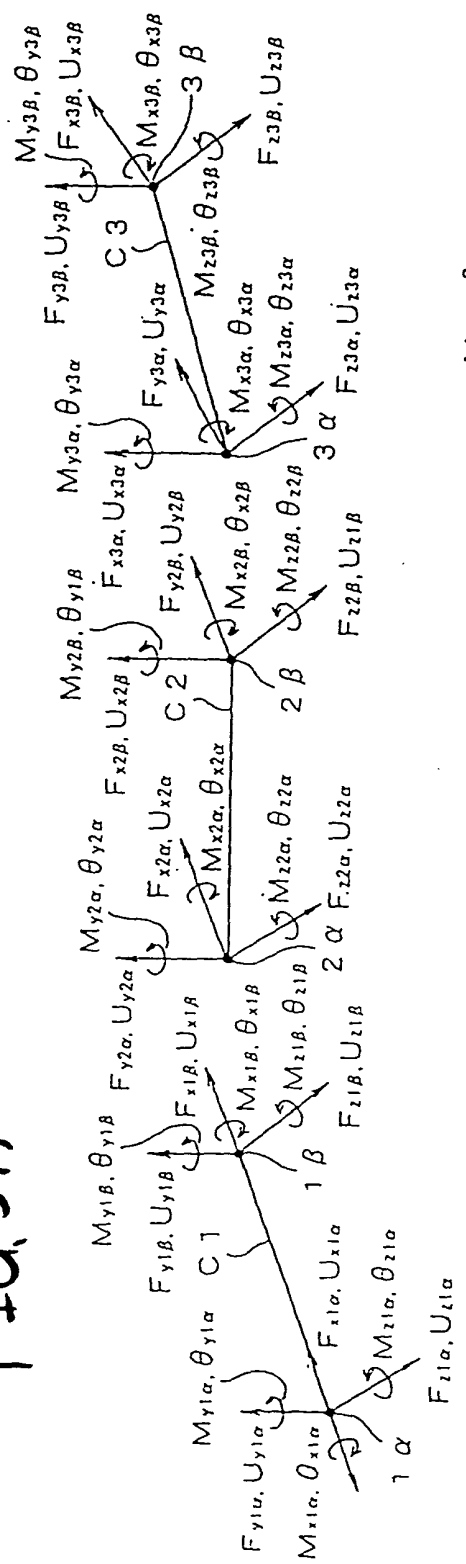


FIG. 5B

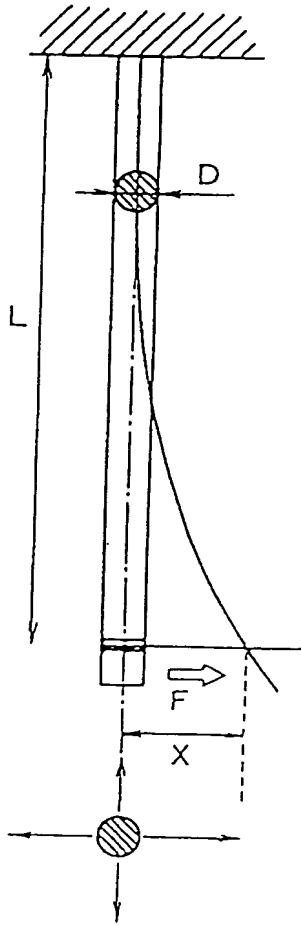


FIG. 6A

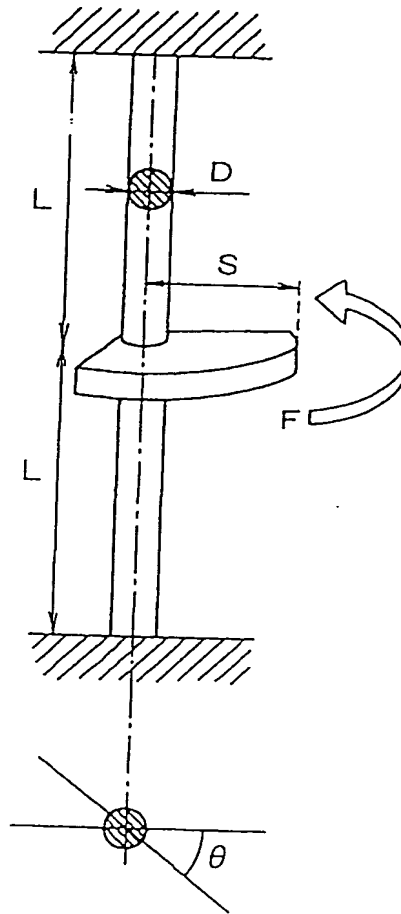


FIG. 6B

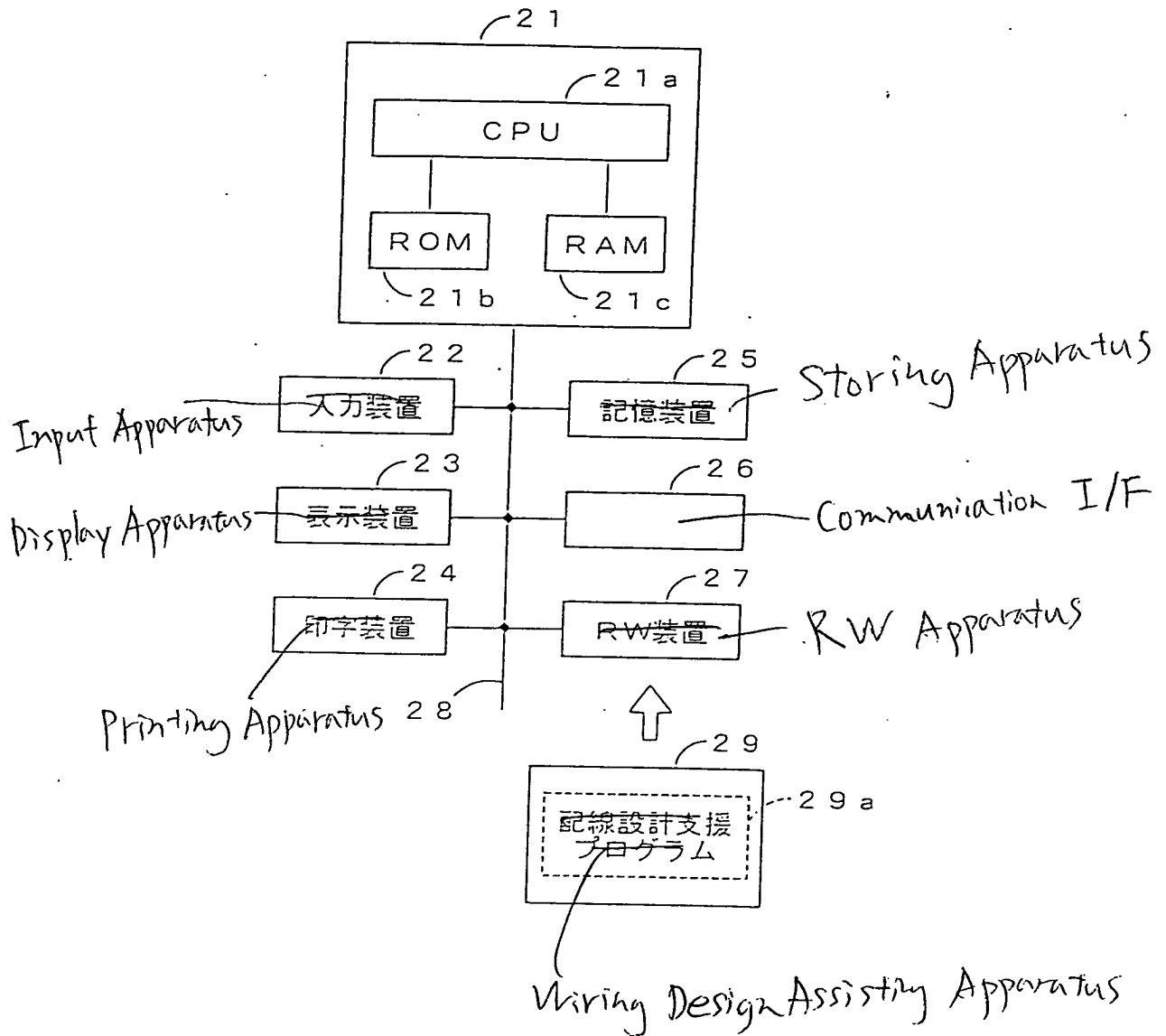
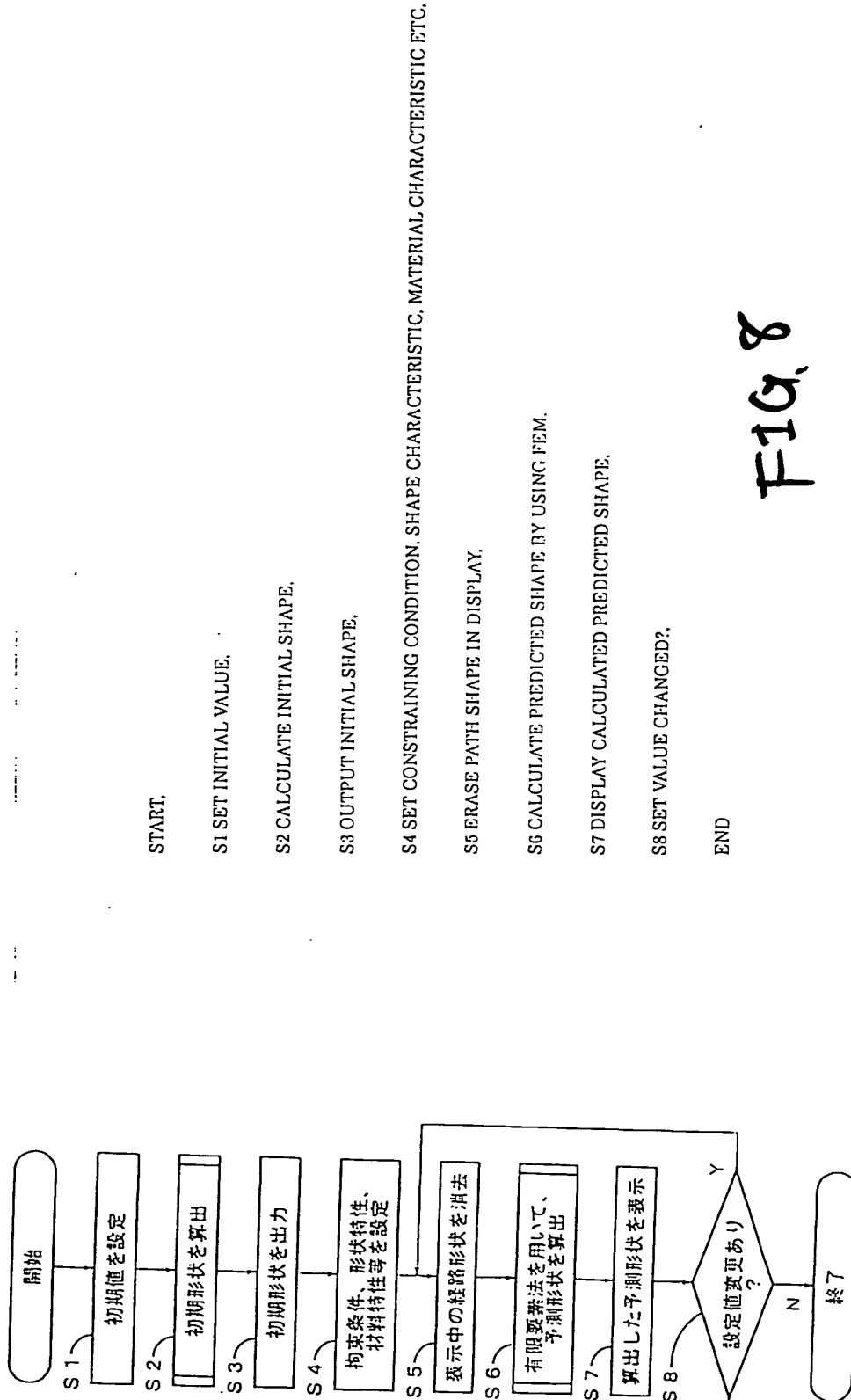
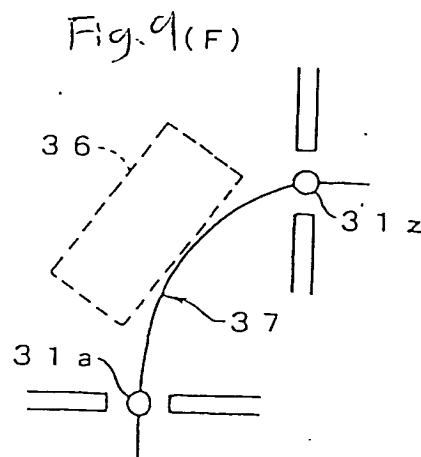
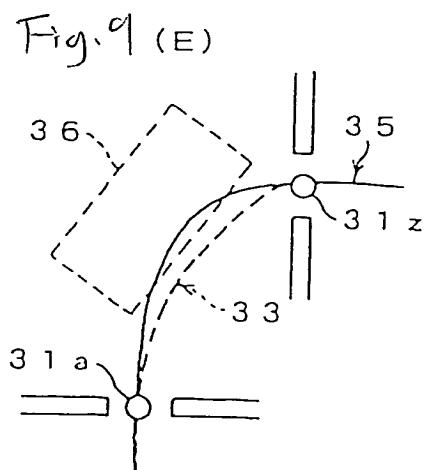
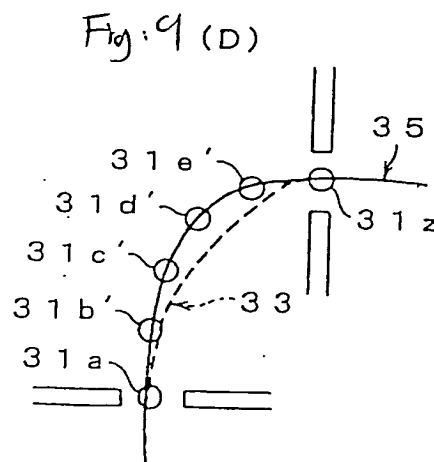
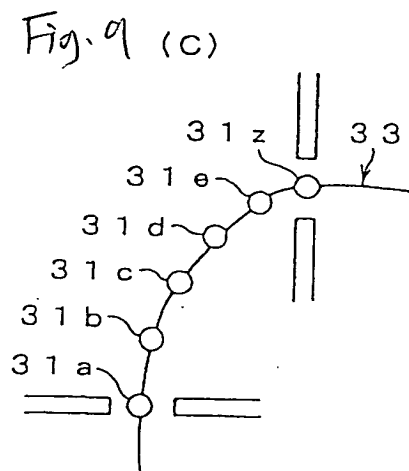
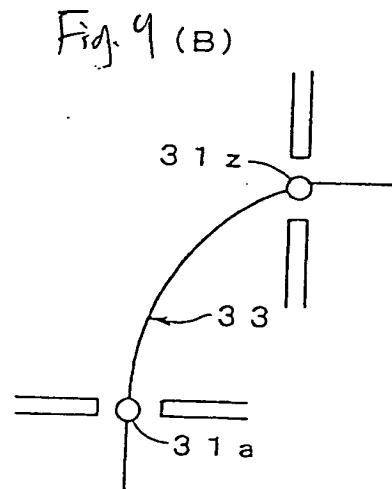
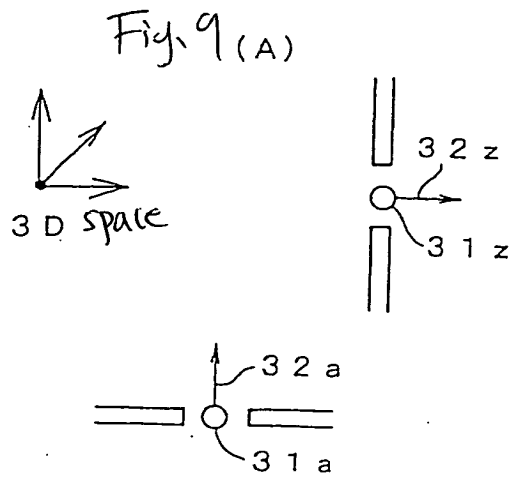


FIG. 7





START, S1 SET INITIAL VALUE,
 S2 CALCULATE INITIAL SHAPE,
 S3 OUTPUT INITIAL SHAPE,
 S4 SET CONSTRAINING CONDITION, SHAPE CHARACTERISTIC,
 MATERIAL CHARACTERISTIC,
 S5 SET MAGNITUDE AND DIRECTION OF APPLIED FORCE,
 S6 ERASE PATH SHAPE IN DISPLAY,
 S7 CALCULATE NEW PREDICTED SHAPE BY USING FEM,
 S8 CALCULATE STRAIN AND STRESS BY USING FEM,
 S9 CALCULATE REACTION FORCE AND MOMENT PRODUCED
 AT CONSTRAINING POINT BY USING FEM,
 S10 DISPLAY CALCULATED NEW PREDICTED SHAPE,
 S11 DISPLAY CALCULATED STRAIN AND STRESS ALONG WITH
 NEW PREDICTED SHAPE,
 S12 DISPLAY CALCULATED REACTION FORCE AND MOMENT
 ALONG WITH NEW PREDICTED SHAPE,
 S13 IS THERE FINISHING TRIGGER?
 END

FIG 10

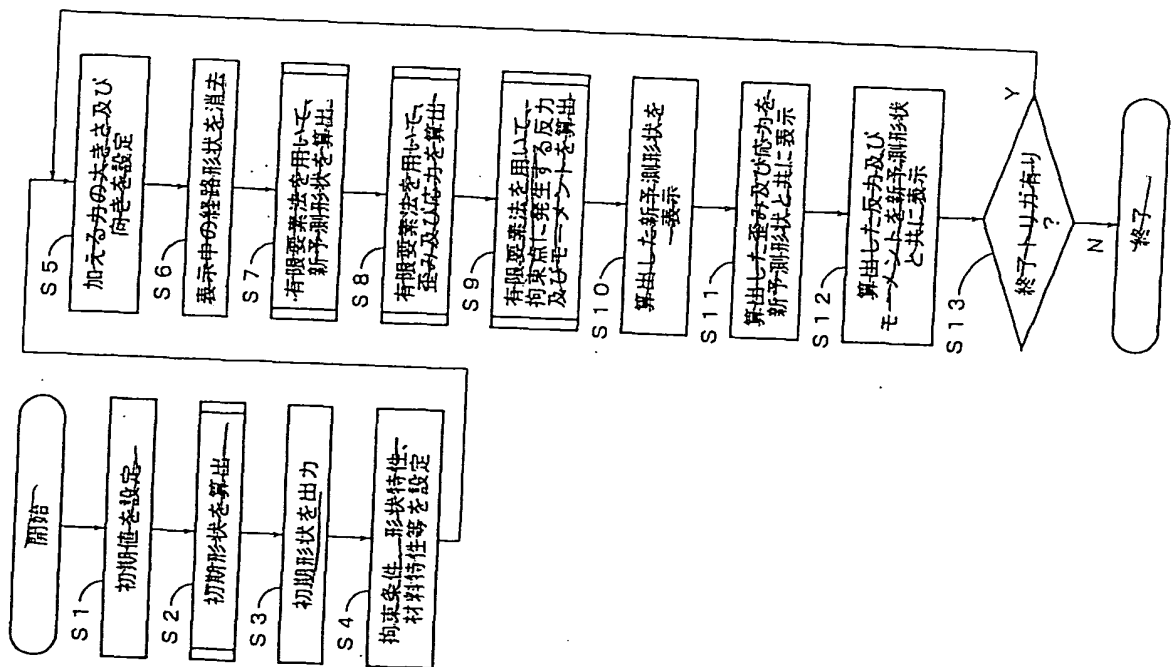


FIG. 11A

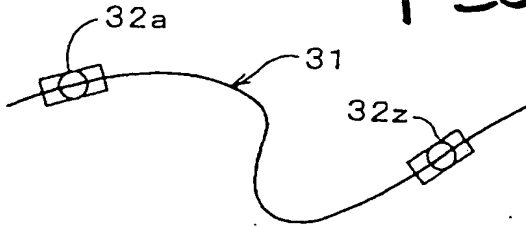


FIG. 11B

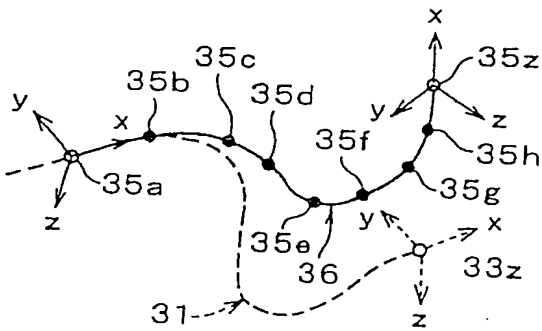
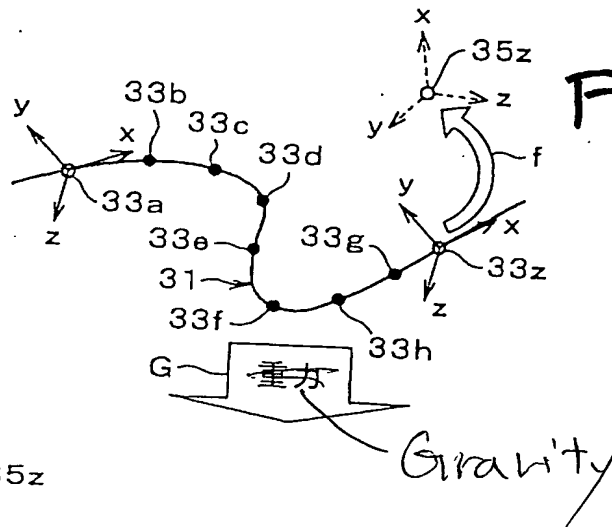
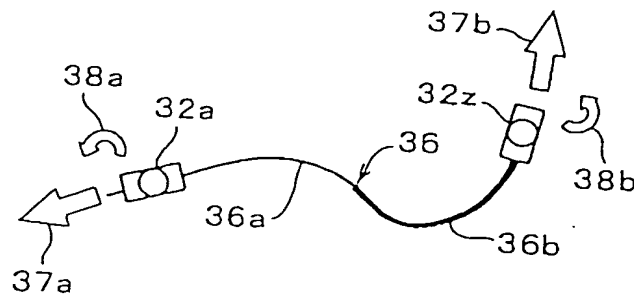


FIG. 11C

FIG. 11D



START
 S1 SET INITIAL VALUE,
 S2 CALCULATE INITIAL SHAPE,
 S3 OUTPUT INITIAL SHAPE,
 S4 SET CONSTRAINING CONDITION, SHAPE CHARACTERISTIC,
 MATERIAL CHARACTERISTIC ETC,
 S5 ERASE INITIAL SHAPE,
 S7 CALCULATE PREDICTED SHAPE OF t_i BY UTILIZING FEM,
 S8 OUTPUT PREDICTED SHAPE (SHAPE IN CALCULATING
 PROCEDURE) OF t_i ,
 S11 ERASE PREDICTED SHAPE OF t_i ,
 S12 OUTPUT PREDICTED SHAPE (FINAL SHAPE) OF t_i END

FIG. 12

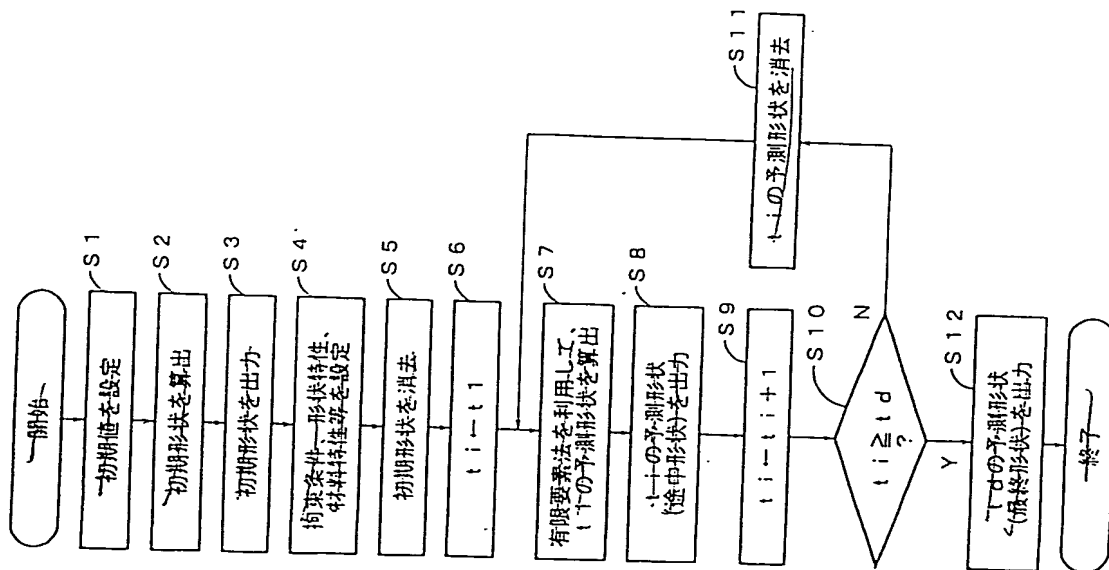


FIG. 13A

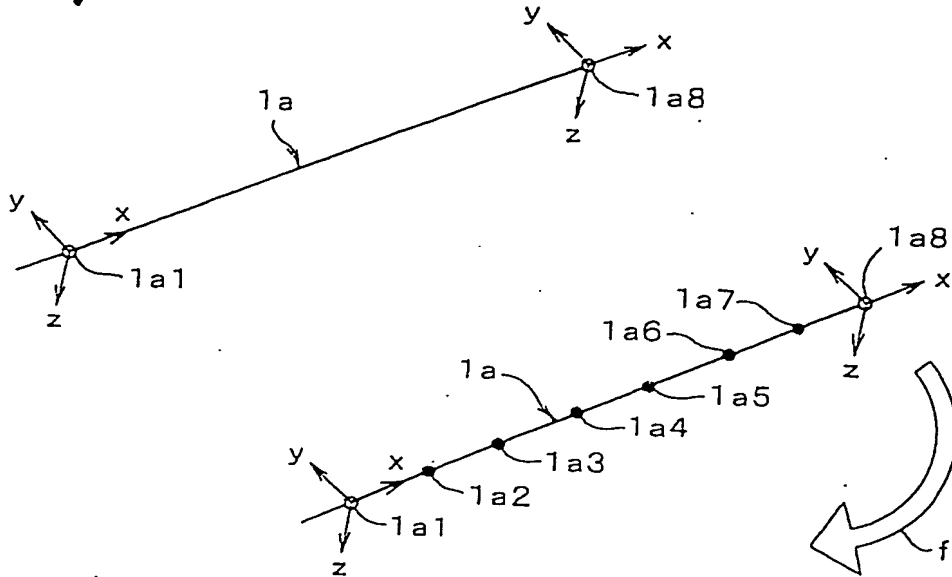


FIG. 13B

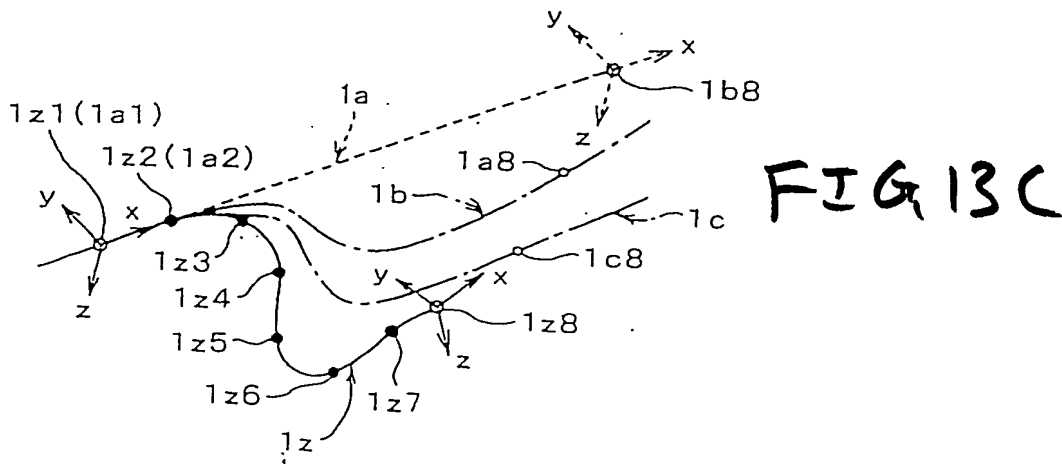


FIG. 13C

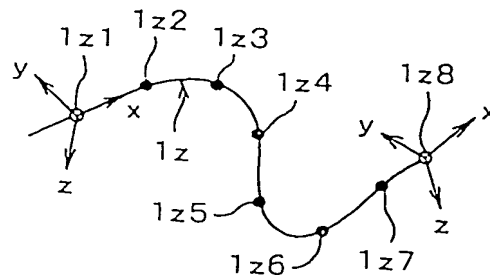


FIG. 13D